

Shortwavelength Terrestrial Backgrounds

MSX Instrumentation

UVISI and SBV

Objectives

The Shortwavelength Terrestrial Backgrounds Team has a primary science mission to characterize the terrestrial auroral and airglow limb and below-the-horizon spectral databases in the 110- to 900-nm wavelength range using the UVISI instrument.

The goal is to acquire a representative database on global, seasonal, diurnal, and temporal variations. There are also many emissions that are of interest in assessing global change and the environment. Minor chemical species that are the most environmentally sensitive pertain to the families of odd-oxygen, odd-nitrogen, and odd-hydrogen. Of particular interest is the global distribution and change in

ozone, because of its role in the transmission of ultraviolet radiation to the ground and the resulting biological impact on all life on Earth.

Example Objective

Determine the altitude density profiles of ozone during the day and night at many geographical locations during different times of the year over the life of the MSX satellite.

Description

Observing the Earth in the ultraviolet between 250 and 340 nm during the day will permit the determination of the change in ozone abundance with altitude to 60 km, using the wavelength variation of the backscattered solar irradiance. At night, stellar, planetary, and lunar occultation through absorption in the ultraviolet and visible will

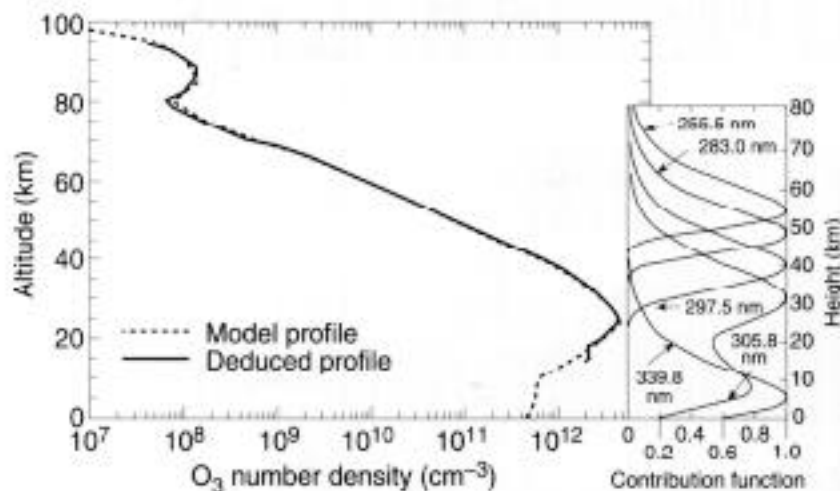
provide, for the first time, the ability to derive altitude profiles of ozone from 20 to 100 km from one set of observations. Changes can be monitored in the ozone altitude distribution associated with the development of the ozone hole from baseline conditions that exist during the depth of the polar night in either the northern or southern winter hemisphere polar region.

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Shortwavelength altitude profiles of ozone.

